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REMARKS

This is a full and timely response to the non-final Official Action mailed January 9, 2007. Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

Claim Status:

Claims 19-52 were withdrawn from consideration under the imposition of a previous Restriction Requirement. To expedite the prosecution of this application claims 19-52 are cancelled by the present paper. The withdrawn claims are cancelled without prejudice or disclaimer. Applicant reserves the right to file any number of continuation or divisional applications to the withdrawn claims or to any other subject matter described in the present application.

By the forgoing amendment, new claims 54-72 have been added. Thus, claims 1-18 and 53-72 are currently pending for further action.

Allowable Subject Matter:

In the recent Office Action, the Examiner indicated the presence of allowable subject matter in claim 17. Applicant wishes to thank the Examiner for this finding of allowable subject matter.

Accordingly, claim 17 has been amended herein and rewritten into independent form. Therefore, following entry of this amendment, claim 17 should be in condition for allowance based on the finding by the Examiner of allowable subject matter in claim 17. Additionally, new claims 64-72 depend from claim 17 and should, therefore, be in condition for allowance as well.

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Prior Art:

Claims 1 and 5-7 were rejected as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 3,879,275 to Cressman et al. ("Cressman"). For at least the following reasons, this rejection is respectfully traversed.

Claim 1 recites: "A method of forming an electrolyte, comprising: removably coupling a perimeter support to a temporary substrate; and electrodepositing an electrolyte composite film on said temporary substrate." Applicant wishes to note that the method of claim 1 expressly calls for an *electrolyte composite film* to be electrodeposited. This subject matter is clearly not taught or suggested by Cressman.

First, it must be noted that the term "electrolyte" has a variety of definitions in different arts and different contexts. In the context of electrodeposition, the term electrolyte usually refers to a solution that conducts an electric current. (*See,* <http://antoine.frostburg.edu/chem/senese/101/glossary/e.shtml#electrolyte>). However, in the context of a fuel cell, an electrolyte is specifically a membrane disposed between electrodes, an anode and a cathode, that allows the passage of or conducts ions, mainly protons, between the two electrodes.

Applicant's specification clearly defines the term "electrolyte" as used in the claims. According to Applicant's specification, "the term "electrolyte" is meant to be understood broadly as referring to a substance, either solid or liquid, that will provide ionic conductivity when dissolved in water or when in contact with it." (Applicant's specification, paragraph 0017).

In contrast, Cressman does not teach or suggest a method in which an electrolyte film is electrodeposited, where the electrolyte film, as defined by Applicant, conducts ions in the

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presence of moisture. The recent Office Action fails to explain how or where Cressman teaches the claimed method that includes electrodepositing an *electrolyte* film within the meaning of Applicant's claims.

Second, it must be noted that Applicant's claim recites electrodepositing an *electrolyte composite* film. In contrast, Cressman teaches electro-polymerization of monofunctional monomers. (Cressman, abstract). Cressman fails to teach or suggest the claimed method that includes electrodepositing an *electrolyte composite* film. Moreover, the recent Office Action fails to address this aspect of Applicant's claims and fails to indicate how or where Cressman teaches the electrodepositing of an *electrolyte composite* film. Cressman merely teaches the production of a polymer, not a composite film.

"A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. For at least these reasons, the rejection of claim 1 and its dependent claims based on Cressman should be reconsidered and withdrawn.

Alternatively, claims 1, 5-10, 13, 15 and 16 were rejected as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 5,281,327 to Honda et al. ("Honda"). For at least the following reasons, this rejection is respectfully traversed.

As explained above, claim 1 recites: "A method of forming an electrolyte, comprising: removably coupling a perimeter support to a temporary substrate; and electrodepositing an electrolyte composite film on said temporary substrate," where Applicant's specification clearly defines the term "electrolyte" as "referring to a substance, either solid or liquid, that

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will provide ionic conductivity when dissolved in water or when in contact with it."

(Applicant's specification, paragraph 0017).

In contrast, Honda, like Cressman, does not teach or suggest a method in which an electrolyte film is electrodeposited, where the electrolyte film, as defined by Applicant, conducts ions in the presence of moisture. The recent Office Action fails to explain how or where Honda teaches the claimed method that includes electrodepositing an *electrolyte* film within the meaning of Applicant's claims.

"A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. For at least these reasons, the rejection of claim 1 and its dependent claims based on Honda should be reconsidered and withdrawn.

Additionally, various dependent claims recite subject matter that is further patentable over the teachings of Honda. Specific, non-exclusive examples follow.

Claim 9 recites "wherein said metallic material comprises nickel." In contrast, Honda does not teach or suggest this subject matter, nor has the Office Action cited such a teaching in Honda. For at least this additional reason, the rejection of claim 9 should be reconsidered and withdrawn.

Claim 12 recites "electrodepositing a layer of ions on said electrolyte composite film." This concept is not taught or suggested by Honda. In this regard, the Office Action argues that "Honda et al teach (see col. 2, line 48 to col. 3, line 3) that two distinct layers were formed in the process." (Action of 1/9/2007, p. 4). The action then concludes that the second layer formed constitutes the claimed layer of ions formed by electro-deposition. However,

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the two layers formed are two polymer layers formed by the electro-polymerization of two monomers. According to Honda, "a layer of the polymer produced by the polymerization of component (a) is formed in intimate contact with said conductive polymer layer 6." (Honda, col. 2, lines 60-65). Honda does not teach or suggest that the second polymer layer "formed in intimate contact" with the first polymer layer is a layer of ions. Moreover, the second layer is not technically formed by electro-deposition as claimed, but rather is formed by electro-polymerizing monomers that just happen to be "in intimate contact" with the previous polymer layer already. Thus, Honda fails to teach or suggest "electrodepositing a layer of ions on said electrolyte composite film." For at least these additional reasons, the rejection based on Honda of claims 12, 13, 15 and 16 should be reconsidered and withdrawn.

Claim 11 was rejected under 35 U.S.C. § 103(a) over the teachings of Honda taken alone. This rejection is respectfully traversed for at least the same reasons given above with respect to claim 1 and for the following additional reasons.

Claim 11 recites "wherein removably coupling said perimeter support comprises depositing a release material on said temporary substrate prior to electrodepositing said electrolyte composite film." The recent Office Action concedes that Honda fails to teach the claimed depositing of a release material. (Action of 1/9/07, p. 4). However, the Action nevertheless concludes that the subject matter of claim 11 is obvious in view of Honda. (*Id.*). This is clearly incorrect.

Honda teaches a process of electro-polymerization. The Honda system does not electro-deposit a film on a temporary substrate that is then removed from the temporary substrate. Consequently, Honda would not suggest to one of skill in the art the depositing of a release material as recited in claim 11.

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Additionally, the rejection of claim 11 is legally insufficient. The examiner has the initial burden of demonstrating that all the claimed features of the invention are taught by the prior art. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Where the examiner relies on a single reference under § 103, it is insufficient to merely state that it would be obvious, or a mere matter of design choice, to modify the disclosure to include the features of the claimed invention. *In re Mills*, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990). "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. (emphasis added). Accord. M.P.E.P. § 706.02(j).

For at least these additional reasons, the rejection of claim 11 should be reconsidered and withdrawn.

Claims 2-4, 12, 14, 18 and 53 were rejected under 35 U.S.C. § 103(a) over the combined teachings of Honda and U.S. Patent No. 6,059,943 to Murphy et al. ("Murphy"). This rejection is respectfully traversed for at least the same reasons given above with respect to claim 1 and for the following additional reasons.

Claim 2 recites "wherein said electrolyte composite film comprises a structural material and an electrolyte material." The recent Office Action concedes that Honda fails to teach depositing a combination of structural material and polymeric material. (Action of 1/9/07, p. 4). Consequently, the Action cites to Murphy. (*Id.* at p. 5). Murphy teaches a membrane suitable for use in electrochemical devices. (Murphy, abstract). According to the Office Action, the membrane taught by Murphy includes "composite polymer-metal oxide membranes." (Action of 1/9/07, p. 4).

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However, neither reference teaches or suggests electrodepositing both an electrolyte material and a structural material to form an electrolyte composite film by electro-deposition. Honda does not teach electrodepositing a structural material along with a polymeric electrolyte material. Neither does Murphy.

"To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). For at least these additional reasons, the rejection of claim 2 should be reconsidered and withdrawn.

Claim 3 recites "wherein said electrolyte material comprises perfluorosulfonate ionomer particles." The recent Office Action fails to indicate how or where the cited prior art teaches this subject matter. For at least this additional reason, the rejection of claim 3 should be reconsidered and withdrawn.

Claim 14 recites "wherein said layer of ions comprises at least one of perfluorosulfonate ionomers or sulfonate polyetherketones." The recent Office Action fails to indicate how or where the cited prior art teaches this subject matter. For at least this additional reason, the rejection of claim 14 should be reconsidered and withdrawn.

Claim 18 recites "wherein electrodepositing said electrolyte composite film comprises electrophoretic deposition and electrodepositing said layer of ions comprises electrolytic deposition." The recent Office Action fails to indicate how or where the cited prior art teaches this subject matter. For at least this additional reason, the rejection of claim 18 should be reconsidered and withdrawn.

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Claim 53 recites "simultaneously electrodepositing electrolyte particles and structural particles to form a single layer of said electrolyte composite film." As noted above, there is no reference of record that teaches or suggests electrodepositing structural particles along with electrolyte particles to form a single layer of an electrolyte composite film. For at least this additional reason, the rejection of claim 53 should be reconsidered and withdrawn.

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Conclusion:

The newly added claims are thought to be patentable over the prior art of record for at least the same reasons given above with respect to the original independent claim, claim 1. Therefore, examination and allowance of the newly added claims is respectfully requested.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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DATE: April 9, 2007

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